WEATHER OF THE MONTH.

WEATHER OF NORTH AMERICA AND ADJACENT OCEANS.

GENERAL CONDITIONS.

By H. C. FRANKENFIELD, Supervising Forecaster.

Midway Islands and Honolulu.—The former showed high pressures for the season in the first decade and below normal pressures thereafter, while Honolulu was continuously low the entire month, the markedly low reading of 29.64 inches being reported on the 17th.

Alaska.—Pressure was low during the first week of the month and decidedly and continuously high thereafter, while temperatures were just the reverse, being above normal during the first week followed by below normal temperatures to the end of the month.

United States.—Pressure alternated between low and high during the first and second decades, except in the Rocky Mountain Region where it was high, while during the last decade it was for the most part almost continuously above normal throughout the entire country.

Azores and Bermuda.—Pressure at Bermuda was low from the 3d to 6th and 12th to 16th, and high from the 7th to 10th and from 19th to the end of the month, while Horta was high from the 1st to 11th and 15th to 24th, low from the 12th to 14th, and indifferent from the 25th to 31st.

NORTH PACIFIC OCEAN.

By F. G. TINGLEY, Meteorologist.

January weather on the North Pacific Ocean was, on the whole, similar to that of December, during which relatively quiet conditions prevailed.

From the 1st to the 7th a well-developed cyclone occupied the region of the Aleutian Islands, Bering Sea, and Alaska, with anticyclones extending along both the North American and Asiatic coasts. This pressure distribution resulted in moderately strong westerly winds along the northern steamer routes, at times reaching the force of a fresh gale. Continuous strong southerly winds prevailed along the coast of southeastern Alaska.

Commencing about the 8th, the Asiatic anticyclone developed progressively to the eastward, while pressure rose strongly over Alaska. The Pacific coast anticyclone diminished and moved southeastward. This rearrangement of pressure left the eastern Pacific covered by a cyclone of considerable magnitude but only moderate intensity and with low pressure developing in the region of the Japanese Islands. This pressure distribution continued with but slight modifications until the end of the month.

On the 12th and 13th strong gales were experienced along the northern steamer route near the one hundred and fiftieth meridian and moderate gales on the southern route east of the Hawaiian Islands. On the 23d and 24th moderate gales again prevailed on the latter route and also to the eastward of Japan.

NORTH AMERICA.

By H. C. FRANKENFIELD, Supervising Forecaster.

During the early part of the month with high pressure over the northern and central Plateau regions and low pressure over Alaska, low areas made their appearance over Alberta and as is more or less common with LOWS of this type gave birth to several secondaries, and, while several secondary high pressure centers broke off from the Plateau HIGH and moved eastward, the Alberta type of anticyclone was almost entirely absent. These conditions resulted in extremely cold weather in the West and South, especially in the latter, and in fairly general precipitation from the Plains States eastward, with snows in northern and rains in southern districts.

In the latter part of the month, with continuously high pressure in Alaska, Alberta LOWS were infrequent, the only LOW of North Pacific origin that developed during the month and high pressure areas of the Alberta type, accompanied by quite low temperatures, advanced eastward and southeastward from that region. During the last decade, although well-defined low pressure areas were rare, precipitation was more or less frequent from the Mississippi Valley eastward and an ice storm occurred in the Ohio Valley, Tennessee, and in the mountain districts of southwestern Pennsylvania, Virginia, and the Carolinas (see p. 50, below).

NORTH ATLANTIC OCEAN.

By F. A. YOUNG.

The average pressure for the month was slightly above the normal at land stations on the American coast, in the West Indies, the Bermudas, and the Azores, while it was considerably below on the north coast of Scotland.

As in the previous month the average pressure gradient between the Azores HIGH and the Icelandic LOW was abnormally steep, with unusually heavy weather over the eastern section of the steamer lanes.

The LOW that was central off the Canadian coast on December 31, 1919, as shown on Chart XVI for that date moved rapidly eastward, and on January 1 was central near latitude 52° N., longitude 37° W. (see Chart IX). Heavy southwesterly gales swept over the region between the fortieth and fiftieth parallels, and thirtieth and fiftieth meridians, several vessels reporting wind velocities of from 75 to 90 miles an hour. On the same day strong northerly gales were encountered as far west as the twentieth meridian. On January 2, as shown on Chart X, the western disturbance of January 1 was central near latitude 50°, longitude 22°, while winds of from gale to hurricane force prevailed between the twentieth and fortieth meridians.

On the 3d the center of this LOW was near Valentia, Ireland, and the storm area had contracted in extent since the previous day, although northwesterly gales, with hail, were still encountered in the southwesterly quadrants. On the 5th a disturbance of limited extent was central near Bermuda, with northerly gales between the thirtieth and fortieth parallels, west of the sixty-fifth meridian. From the eighth to the twelfth moderate to strong gales were encountered over the eastern portion of the steamer lanes, reaching their maximum intensity on the 11th, when a number of vessels off the Irish coast reported wind velocities of over 60 miles an hour. Chart XI for January 13 shows a LOW central about 300 miles east of St. Johns, N. F., with strong gales in the southerly quadrants, extending as far south as the thirty-fifth parallel. On the 14th (see Chart XII) heavy weather

prevailed over the greater part of the steamer lanes, as well as over the region between the thirty-fifth and fortieth parallels, and the fiftieth meridian and the European coast. By the 15th the weather had moderated over the northern waters, while in the southern area heavy winds continued until the 21st. The observer on board the American steamship *West Harshaw* reported in a communication regarding this gale as follows: "In conjunction with the gale of January 14 and 15, there was a low lying fog caused by the cold air coming in contact with the warm water. The sea was steaming. At times fog extended over 75 feet in the air and came in gushes, but usually during a squall of cold wind it hung near the water." The position of the vessel at Greenwich mean noon on the 14th was given as latitude 35° 57′ N., longitude 66° 40′ W., and on the 15th, 36° 37′ N., 66° 40′ W. From the 21st to the 23d strong southwesterly to northwesterly gales prevailed over the mid-section of the steamer lanes, with hail and snow on the latter date. On the 24th and 25th the storm area extended over nearly all the ocean north of the fortieth parallel, although on the latter date there was an area of moderate winds between the forty-fifth and and fiftieth parallels and twentieth and thirty-fifth meridians. On the 27th there was a well developed LOW off the west coast of Ireland, with a minimum barometric reading of 28.73 inches; strong westerly gales swept the region between the twentieth meridian and the European coast, while fog was reported in the Irish Channel. From the 29th to the 31st vessels on the eastern section of the steamer lanes encountered moderate westerly and southwesterly gales, and on the latter date the storm area extended over practically the entire ocean, north of the fortieth parallel.

NOTES ON WEATHER IN OTHER PARTS OF THE WORLD.

Mexico.—Mexico City, January 28.—A cold wave of unusual intensity is prevailing here. Forty deaths have been caused among the poorer classes in Mexico City by the cold, and it is feared that the crops in the northern States have suffered damage.—*Washington Evening Star.*

British Isles.—Except for a brief cold spell about the 6th and 7th, weather of an oceanic or southwesterly type prevailed during the greater part of the month. Depressions, which were often of great size and intensity, followed one another in rapid succession and very commonly traveled on a northeasterly course, so that the winds from westerly or southwesterly points predominated, with the result that there were many mild days and the mean maximum temperature for the month in some parts of England exceeded the normal for January by about 4° F. Comparatively high temperatures extended as far as the Arctic Circle, the thermometer at Spitzbergen standing at about 36° F. for a few days. Gales were frequent and widespread, and at times the speed of the wind was very great. [A gust exceeding 50 meters per second. (over 110 miles per hour) was recorded at Quilty, Ireland, Jan. 27.]—*The Meteorological Magazine, February, 1920, pp. 7, 11, and 16.*

For the nine weeks of winter from November 30 to the end of January there was an excess of temperature, and also of rainfall over the British Isles. The controlling factor was the frequent passage of disturbances from the Atlantic, the centers of which for the most part traveled in proximity to Scotland.—*Nature, Feb. 12, 1920, p. 639.*

France.—The chief feature of January, 1920, has been its storminess and the exceptionally heavy rainfall in western and central Europe. * * * Paris suffered considerable damage, the Seine at Pont Royal reaching a level of 24 feet 3 inches above the normal—the highest ever reported. River traffic was impossible, the bridges being blocked. The Seine began to fall on January 5, but a state of flood was maintained more or less through the month.—*The Meteorological Magazine, February, 1920, p. 16.*

Paris, January 5.—In Paris and the suburbs 22,000 persons are idle because of the flooded factories. Thirty-one suburbs are inundated and 7 miles of foot bridges have been constructed. * * * There is little news from the Provinces, but the reports confirm previous advices respecting the widespread flooding of farms and villages.—*Washington Post, Jan. 6, 1920.*

Germany.—Coblenz, January 16.—Flood waters in the Rhine and Moselle Rivers here have reached the highest stage in 136 years, according to official German records. * * * Reports from higher up both streams state that the rain has ceased, and it is expected, with the anticipated advent of cold weather, that the water will soon recede.—*N. Y. Evening Post, Jan. 17, 1920.*

Bohemia and Moravia.—[In the middle of the month] heavy floods were experienced on the rivers of Bohemia and Moravia.

Hungary.—On the 17th and 18th the Danube inundated the lower streets of Budapest.—*The Meteorological Magazine, February, 1920, p. 16.*

Russia.—Reval, January 10.—Thousands were frozen to death in a blizzard which swept across Esthonia on New Year's Day. Reports received here state that 300 bodies of refugees were found in a forest between this city and Narva, and American Red Cross workers say many babies were frozen to death at their mothers' breasts.

Many fugitives from the collapsed army, led by Gen. Yudenitch in his recent offensive against Petrograd, have perished in the drifting snow.—*Washington Evening Star, Jan. 10, 1920.*

Italy.—Rome, January 8.—Heavy rains are causing floods throughout most of Italy. The Arno and Tiber Rivers are overflowing their banks and inundating many sections. In several districts houses have collapsed.

Later in the month [11th to 17th] the Arno, at Florence, was in flood, and at the same time heavy rain and mild weather in the Alps, following on a heavy snowfall, caused destructive avalanches.—*The Meteorological Magazine, February, 1920, p. 16.*

Australia.—Clippings from the Mercury, Hobart, Tasmania, and notes in the Meteorological Magazine (February, 1920, p. 16) indicate that the great drought which has menaced Australia was ended over much of the stricken region during the last few days of November and the first days in December by heavy falls of rain in eastern New South Wales and Victoria, which substituted floods for the drought. There was more rain late in December and useful rains occurred throughout January.